Multi-Functional Elevator Driven By Solar Energy

MACHA PRAHANI
M.Tech Student
Dept of Mechanical
CMR Technical Campus
Hyderabad, T.S, India

CH.NAGARAJ
Assistant Professor
Dept of Mechanical
CMR Technical Campus
Hyderabad, T.S, India

D.MANEIAH
Associate Professor & HOD
Dept of Mechanical
CMR Technical Campus
Hyderabad, T.S, India

Abstract: **Generally a lift is understood to be Lifting device composed of the platform or cage that's elevated and decreased robotically inside a vertical shaft to be able to move individuals from one floor to a different inside a building. The part of the type of elevator is straightforward so we found these lifts in working everywhere, but here the idea is extremely different, additionally towards the normal function, a unique feature is within the system so that the device carries the folks in horizontal direction also, quite helpful for a lot of categories of individuals to mix very busy streets. People like physically handicapped, old aged people, and children's can utilize these kinds of lifts. A lift or lift is a kind of vertical transportation that moves people or goods in one portion to a different portion inside a building or block. Additionally towards the normal function a unique feature is within the system so that it moves both in the directions in vertical and horizontal.**

Keywords: **Multi Functional Elevators; Lifting Device;**

I. INTRODUCTION

Because of modernization, the elevator system has turned into a part of existence as high-rise structures are a very common sight. High-rise building won't be realizable with no implementation of lifts. Lifts play a fundamental part of our lives. But just about all lifts worldwide, greater than 99% they're being used today are made to carry the folks in vertical direction. Only couple of lifts created for special reasons can relocate different directions, the hidden technology involved with these lifts isn't popular, there with this project jobs are adopted to high light farfel treatments. To demonstrate the idea practically, a proto type module is built using simple technology for that live demonstration. The primary purpose of the work would be to create a hardware prototype and software to simulate the multi-functional elevator system, quite helpful for anyone for crossing the railway tracks at railway stations as well as for crossing very busy Streets. 89C51 microcontroller can be used as control system from the elevator [1]. The program from the elevator product is to manage the general elevator system and it is formula. When it comes to hardware prototype, it's accustomed to simulate the elevator system with three motors to manage the movement and motion from the elevator in vertical and horizontal directions. Push buttons to do something as input demands from travelers from the elevator in one side with other finish. Limit switches are utilized and they're arranged at various points of mechanical structure to recognize the positioning of the elevator. The detailed description is supplied in following sections.

II. ELEVATOR SYSTEM

A lift is really a device, generally employed for vertical transportation of travelers or freight to various flooring or levels, as with a structure or perhaps a mine. The word elevator generally denotes one with automatic safety products the earliest models were known as hoists. Lifts contain a platform or vehicle travelling in vertical guides inside a shaft or hoist way, with related hoisting and lowering systems along with a power source. The introduction of the current elevator profoundly affected both architecture and also the mode of growth and development of metropolitan areas by looking into making many-storied structures practical. Now-a-days lifts mainly contain a shaft where the vehicle (also referred to as cab) rises and lower. In "traction" lifts the vehicle is drawn up with the aid of steel ropes, which rollover the top of the grooved lever. The burden from the vehicle is generally balanced having a counterweight. The multi-functional elevator designed here's quite different, the benefits and programs are plenty when in comparison with simple vertical elevator, here this elevator, after transporting the individuals as much as certain height, and it'll behave as an individual conveyor.

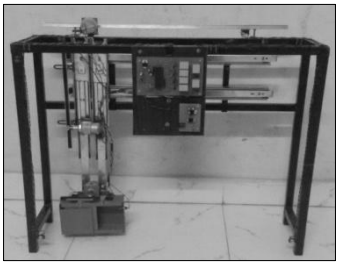

Fig.1.Proposed Elevator System

III. PROPOSED ELEVATOR

The block diagram goes towards the project jobs are proven in the finish of the chapter is described briefly, this project work "Multi-Functional Elevator Driven by solar Energy" is essentially targeted for crossing very busy streets of primary metropolitan areas and national high way streets where there's absolutely no way for that public to mix these streets due to continuous flowing traffic. Exactly the same system is also utilized at railway stations for crossing the railway tracks. The innovative concept active in the product is to make use of non-conventional energy resource, there by these types of lifts could be built at rural areas over the high ways, where accessibility to conventional power is crucial. These days traffic, because of population growth and urbanization, Globalization the traffic resulting in metropolitan areas are growing daily in a fast rapid growth. Therefore, the streets have become daily over crowded individuals are frightened to mix the streets, if anybody dared, resulting in accidents. To be able to overcome this issue, this project jobs are adopted, which carries individuals to other finish from the road securely. Otherwise, means if the type of product is not been around, than manual traffic control needs to be incorporated at busy centers (where individuals usually are meant to mix the street) also it requires a continuous, devoted manpower is needed and it should cater 24 hrs each day, all year round, which requires not just financial burden but the human fatigue element can't be prevented. To operate the circuit in most climate conditions and all sorts of atmosphere conditions battery power-based solar power, which creates 12V Electricity current is adopted for the style of this project work. During night timings and also the days when sunlight isn't available, the 12V battery is going to be mindful the whole process of the circuit [2]. Whenever sunlight comes provision will produced in the work so that the daylight charges you solar power which charges battery so the functionality from the circuit is going to be all of the occasions with no interruption. In connection with this choice of solar sections and battery is essential, always greater rating batteries and sections should be preferred for united nations-interruption operation. The benefit of using reduction gear mechanism motor would be that the motor speed is going to be decreased and torque is going to be elevated, there with a small motor can drive heavy loads. Total three push buttons are utilized within this project work with the ease of access of user, one push button is installed within the container and yet another two push buttons are set up at each side from the mechanism. Initially once the machine is within idle condition, the doorway of elevator remains in open condition, whenever anyone wants make use of the elevator to mix the street or rail track, he/she'll enter within the cab and depresses the push button, through which the elevator door is going to be closed instantly and it'll be traveled up and down as much as certain distance, next immediately the elevator direction is going to be altered and traveled in horizontal direction as much as certain distance, after that again exactly the same cab travels in vertical direction in lower wards to achieve the floor level [3]. After reaching the elevator with other side, the cab door is going to be opened up instantly. Another two switches installed at each side from the mechanism, quite simply each side from the road, supplies a facility towards the user so that regardless of cab's position, it may be introduced towards the user side instantly. For instance, when the sides are denoted as 'A' and 'B', along with a person was at 'A' side, while the elevator remains at 'B' side, such condition the one who was at 'A' side needs to depress the push button arranged at his side, through which the elevator process starts from closing the doorway and traveling completely, finally it reaches towards the user finish instantly. Similarly other part person will also have this facility. To sense weather the doorway of the cab is opened up or closed, two limit switches are arranged at each side from the door. When the door remains in open condition, one switch remains in triggered condition, otherwise another switch come in triggered condition. The outputs of the switches are given to microcontroller, through which it may understand the health of the doorway, like wise all of the switches outputs are given for this controller for determining the cab condition. Two switches are arranged at each side from the mechanism that is triggered instantly on a trip the cab flat. Similarly for vertical movement also two switches are arranged for determining the cab whether it's in walk out or 2nd floor. Depending on the cab position, these lever switches are operated instantly, and in line with the information created by these switches, the controller controls the motors individually. To manage the 3 motors individually both in the directions (forward and reverse actions), six relays are utilized and they're interfaced with microcontroller through their drive circuits. Depending on the signals produced through the push buttons and lever switches, the controller controls the motors through relay contacts [4]. Each motor is travelled into two relays, one relay for forward direction and yet another relay for reverse direction. The motors utilized in this project work are Electricity motors the polarity is altered through relay contacts. When the correct polarity is maintained, then your motor rotates in clock wise direction, similarly when the polarity is corrected, the motor rotates in anti-clock wise direction. The doorway control motor installed within the cab, if this rotates in forward direction, the doorway is opened up, and together with if this rotates backwards direction, the

doorway is closed. Microcontroller: Microcontroller based machine is made to cater the input needs for cab position recognition circuit made with limit switches and push buttons, output needs for manipulating the motors through relays to produce mechanical transmission from the cab in vertical and horizontal directions [5]. Mechatronics is seen as encompassing subjects varying from embedded micro-processor charge of "intelligent" items, to robotics and manufacturing automation. Now visiting the work, here the entire Mechanical Transmission Section was created with three Electricity motors the part of every motor is different from someone to other. With the aid of one motor mounted within the cab, the cab door mechanism is controlled so that the doorway could be opened up or closed. Here sliding kind of door was created, Because of the insufficient sources for that initial door mechanism for example proper rollers, the style of the doorway mechanism has altered to make use of materials that are offered, this is the image of cab and it is slider door mechanism built with MS (mild steel) plates, 1 mm thick MS plate is chosen with the objective, which is cut to the different dimensions and welded in a box shape. The movement of door is control through the rotation from the Electricity motor with two limit switches, these limit switches are arranged within the cab, while opening the doorway, the motor rotates in forward direction and also the door is moved towards left side, after moving certain distance, the doorway mechanism triggers the limit switch by activating its lever. There through the door movement is stopped. The doorway which moves among the sliding channels arranged within the box, is connected to the strip (door guide). Upon reaching the preferred level, to help make the elevator door open, signal will be presented for that motor to rotate. Once the motor shaft rotates, the plastic strip using the trigger bar will move until it touches latch from the micro-switch, this can then create a port to prevent the motor. After remaining open for any couple of seconds, the motor is going to be controlled to maneuver again within the other way. This motion would be the opening and closing door movement. A course will be included to the primary program for that motion from the elevator door. For additional clearness concerning the toothed wheel that's combined straight to the Electricity motor shaft, DCmotor arrangement has ended the cab [6].

IV. CONCLUSION

The work focus on "Multi-Functional Elevator" was created and developed effectively. For that demonstration purpose a prototype module is built and answers are acceptable. While developing this prototype, I've consulted couple of experts individuals who're getting understanding in the area of mechatronics which professionals working at different organizations fit in with Hyderabad assisted us while fabricating the prototype. As it is a prototype, an easy working multi-functional elevator is built. Instantly this is often implemented by utilizing solar power placed on the top from the construction. As it is a prototype, much amount isn't invested so, I made use of rack and pinion mechanism to be able to alter the rotational motion to straight line motion since i can't use hydraulic or counterweight mechanism within this prototype. The entire machine is built with in your area available components particularly the mechanical components are utilized within this project work are acquired from mechanical fabricators. A few of the modifications must execute within the design to really make it just as real working system with respect to the needs. All mechanical transmission section including electronic hardware is mounted for this structure. Durable battery can also be covered within the structure, whereas the Solar power will be stored outdoors to capture the sun's ray's energy, it's not mounted within the structure.

V. REFERENCES

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